CLAIMS

What is claimed is:

1. A method for restoring a connection in a network, the method comprising the steps of:

detecting a failed line in a link between a first node and a second node, where the failed line is associated with a sub network connection (SNC); and

mapping the sub network connection (SNC) to an alternate line in the link in order to permit restoration of the SNC.

2. The method of claim 1, wherein the failed line and the alternate line are established by use of Optical Signaling & Routing Protocol (OSRP).

3. The method of claim 1, further comprising the step of:

identifying the SNC based upon the failed line.

4. The method of claim 1, wherein said mapping step is performed based upon a priority of said SNC.

5. The method of claim 4, wherein said SNC is a first SNC, said network comprising a second SNC, said priority of said first SNC is higher than a priority of said second SNC, said method further comprising the step of mapping said second SNC to said alternate line in the link after said step of mapping the first SNC to the alternate line in the link.

6. The method of claim 1, further comprising the step of:

obtaining a timeslot on the alternate line after mapping the SNC on the alternate line, where the timeslot is a discrete quanta of bandwidth on a line.

7. The method of claim 1, further comprising the step of:

sending a setup message from the first node to the second node.

8. The method of claim 7, wherein said first and second nodes include first and second switch fabric circuits, respectively, said first and second switch fabric circuits having first and second cross connection configurations, respectively, said method further comprising:

changing, at the second node, said second cross connection configuration in said second switch fabric circuit to obtain a third cross connection configuration, in order to permit said second node to transmit data on said alternate line, after the setup message is received by said second node.

9. The method of claim 7, further comprising the step of:

sending a setup acknowledgment message from the second node to the first node, in response to receipt of the setup message.

10. The method of claim 9, wherein the setup acknowledgment message includes a cause code indicating whether a cross connection configuration in a switch fabric circuit in the second node was successfully created or not successfully created.

11. The method of claim 9, wherein said first node includes a setup acknowledgement timer circuit configured to determine if the setup acknowledgement message is received by the first node within a setup acknowledgement timer period, said method further comprising:

determining if the setup acknowledgment message is received by the first node within the setup acknowledgement timer period.

12. The method of claim 11, further comprising:

releasing all SNCs associated with the setup message if the setup acknowledgment message is not received by the first node within the setup acknowledgement timer period, wherein there is a stoppage of a flow of data along the SNCs that are released.

13. The method of claim 7, wherein said first and second nodes include first and second switch fabric circuits, respectively, said first and second switch fabric circuits having first and second cross connection configurations, respectively, said method further comprising:

changing, at the first node, said first cross connection configuration in said first switch fabric circuit to obtain a fourth cross connection configuration, in order to permit said first node to transmit data on said alternate line, after the setup message is transmitted by said first node.

14. The method of claim 7, wherein the second node includes a setup timer circuit configured to determine if the setup message is received by the second node prior to

expiration of an inactivity timer period, said method further comprising the step of:

determining if the setup message is received by the second node within the inactivity timer period, wherein the inactivity timer period is started when the second node detects the failed line.

15. The method of claim 1, further comprising the step of:

determining, at the second node, the failed line by detection of the failed line.

16. The method of claim 1, further comprising the step of:

determining, at the second node, the failed line based upon information in a setup message.

17. The method of claim 1, further comprising:

delaying the mapping of the SNC to the alternate line by a time delay amount.

18. The method of claim 1, further comprising the step of:

releasing an SNC that is not mapped to an alternate line, wherein there is a stoppage of a flow of data along the SNC that is released.

19. The method of claim 1, further comprising:

determining if the first node and the second node are capable of performing a local span mesh restoration (LSMR).

20. The method of claim 19, further comprising:

if the first node and the second node are capable of performing the LSMR, then determining if at least one

potential alternate line in the link is capable of performing the LSMR.

21. An apparatus for restoring a connection in a network, the apparatus comprising:

a first node; and

a second node coupled by a link to the first node;

wherein the first node is configured to detect a failed line in the link connecting the first node and the second node, where the failed line is associated with a sub network connection (SNC);

wherein the first node is configured to map the sub network connection (SNC) to an alternate line in the link in order to permit restoration of the SNC.

22. The apparatus of claim 21, wherein the first node comprises:

a Connection Admission Control (CAC) module configured to identify a failed line in the link between the first node and the second node;

a Call Control module (CCM) configured to identify an SNC that needs to be restored due to the failed line; and

a Routing and Signaling Information (RSI) module configured to map the SNC to an alternate line in the link in order to permit restoration of the SNC.

23. The apparatus of claim 21, wherein the failed line and the alternate line are established by use of Optical Signaling & Routing Protocol (OSRP).

24. The apparatus of claim 21, wherein the first node is configured to identify the SNC based upon the failed line.

25. The apparatus of claim 21, wherein the first node is configured to map said SNC based upon a priority of said SNC.

26. The apparatus of claim 25, wherein said SNC is a first SNC, said network comprising a second SNC, said priority of said first SNC is higher than a priority of said second SNC, and wherein the first node is configured to map said second SNC to said alternate line in the link after mapping said first SNC to said alternate line in the link.

27. The apparatus of claim 21, wherein the first node is configured to obtain a timeslot on the alternate line after mapping the SNC on the alternate line, where the timeslot is a discrete quanta of bandwidth on a line.

28. The apparatus of claim 21, wherein the first node is configured to send a setup message to the second node.

29. The apparatus of claim 28, wherein said first and second nodes include first and second switch fabric circuits, respectively, said first and second switch fabric circuits having first and second cross connection configurations, respectively; and wherein said second node is configured to change said second cross connection configuration in said second switch fabric circuit to obtain a third cross connection configuration, in order to permit said second node to transmit data on said alternate

line, after the setup message is received by said second node.

30. The apparatus of claim 28, wherein the second node is configured to send a setup acknowledgment message to the first node, in response to receipt of the setup message.

31. The apparatus of claim 30, wherein the setup acknowledgment message includes a cause code indicating if cross connections in a switch fabric in the second node was successfully created or not successfully created by the second node.

32. The apparatus of claim 30, wherein said first node includes a setup acknowledgement timer circuit configured to determine if the setup acknowledgement message is received by the first node within a setup acknowledgement timer period; and wherein the setup acknowledgement timer period is started when the first node sends the setup message.

33. The apparatus of claim 32, wherein the first node is configured to release all SNCs associated with the setup message if the setup acknowledgment message is not received by the first node within the setup acknowledgement timer period, wherein there is a stoppage of a flow of data along the SNCs that are released.

34. The apparatus of claim 28, wherein said first and second nodes include first and second switch fabric circuits, respectively, said first and second switch fabric circuits having first and second cross connection

configurations, respectively; and wherein said first node is configured to change said first cross connection configuration in said first switch fabric circuit to obtain a fourth cross connection configuration, in order to permit said first node to transmit data on said alternate line, after the setup message is transmitted by said first node.

35. The apparatus of claim 28, wherein the second node includes a setup timer circuit configured to determine if the setup message is received by the second node prior to expiration of an inactivity timer period; and wherein the inactivity timer period is started when the second node detects the failed line.

36. The apparatus of claim 21, wherein the second node is configured to determine the failed line by detection of the failed line.

37. The apparatus of claim 21, wherein the second node is configured to determine the failed line based upon information in a setup message.

38. The apparatus of claim 21, wherein the first node is configured to delay a mapping of the SNC to the alternate line by a time delay amount.

39. The apparatus of claim 21, wherein the first node is configured to release an SNC that is not mapped to an alternate line, wherein there is a stoppage of a flow of data along the SNC that is released.

40. The apparatus of claim 21, wherein the first node is configured to determine if the second node is capable of performing a local span mesh restoration (LSMR).

41. The apparatus of claim 40, wherein the first node is configured to determine if at least one potential alternate line in the link is capable of performing the LSMR, if the first node and the second node are capable of performing the LSMR.

42. An article of manufacture, comprising:

a machine-readable medium having stored thereon instructions to:

detect a failed line in a link connecting a first node and a second node, where the failed line is associated with a sub network connection (SNC); and

map the sub network connection (SNC) to an alternate line in the link in order to permit restoration of the SNC.

43. An apparatus for restoring a connection in a network, the apparatus comprising:

means for detecting a failed line in a link connecting a first node and a second node, where the failed line is associated with a sub network connection (SNC); and

means for mapping the sub network connection (SNC) to an alternate line in the link in order to permit restoration of the SNC.